Mrs. Hayden

Name_____ Date_____

2.7 Prove Angle Pair Relationships

Theorem 2.3--All right angles are congruent

Theorem 2.4-The Congruent Supplements Theorem--

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Theorem 2.5-The Congruent Complements Theorem--

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Prove Theorem 2.4

Given: ∠1 and ∠2 are supplementary
∠3 and ∠2 are supplementary

Prove: ∠1 ≅ ∠3

Statements	Reasons

Postulate 12—The Linear Pair Postulate--_____

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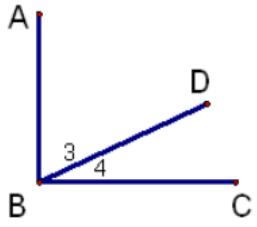
The Complement Theorem—If the noncommon sides of 2 adjacent angles form a right angle, then the angles are complementary angles. (not in book)

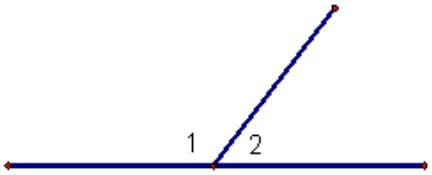
Theorem 2.6—Vertical angles are congruent

How they are used:

Given: $\overline{AB} \perp \overline{BC}$

1. ∠ABC is a right angle — 1. Def of ⊥ lines
2. ∠3 and ∠4 are complementary — 2. The Complement Thm.



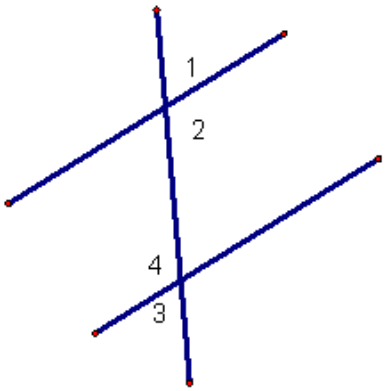


Given: picture

1. ∠1 and ∠2 are a linear pair.	1. Definition of a linear pair
2. ∠1 and ∠2 are supplementary	2. The Linear Pair Postulate
3. m∠1 + m∠2 = 180	3. Def. of supplementary

Given: ∠1 ≅ ∠3
Prove: ∠2 ≅ ∠4

Statements	Reasons
1. ∠1 ≅ ∠3	1. Given

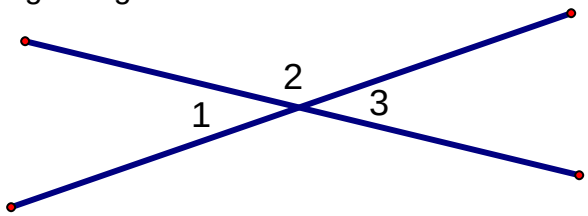


Given: ∠1 and ∠2 are supplementary **Conclusion:** m∠1 + m∠2 = 180
Reason: Definition of supplementary angles

Given: ∠1 and ∠2 are complementary **Conclusion:** m∠1 + m∠2 = 90
Reason: Definition of complementary angles

Given: ∠1 is a right angle **Conclusion:** m∠1 = 90
Reason: Definition of right angles

Given: $\overline{AB} \perp \overline{BC}$ **Conclusion**: ∠ABC is a right angle
Reason: Definition of perpendicular lines

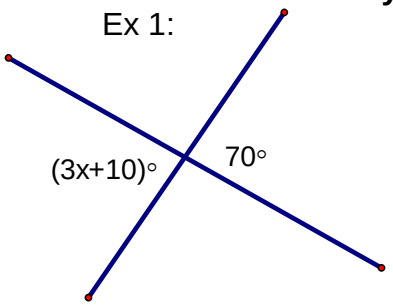


Proof of theorem 2.6:
Given: picture
Prove: ∠1 ≅ ∠3

Statements	Reasons

Solve for x and/or y.

Ex 1:



Ex 2: